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Tour Enlightens City and County Officials About the Importance of Watershed Dams in San Marcos

San Marcos, Texas, June 9, 2008 – San Marcos and Hays County officials recently got a firsthand look at the five floodwater retarding structures (dams) in the Upper San Marcos River Watershed. The Hays County Soil and Water Conservation District (SWCD), Upper San Marcos River Watershed District and the USDA-Natural Resources Conservation (NRCS) sponsored the tour for city and county officials.

They learned how the watershed dams on Sink Spring Creek and Purgatory Creek have proven their worth in protecting local residents from catastrophic flooding and in providing recharge benefits to the Edwards Aquifer. Although conditions were very dry on the tour, the city of San Marcos is no stranger to floods.

For many San Marcos residents, the devastating flood of May 15, 1970, is a distant memory, but one not forgotten. The Blanco River, Sink Spring Creek and Purgatory Creek flooded at the same time into the San Marcos River. Record rains brought 18.5 inches within 30 hours to San Marcos and the Hill Country watershed to the west, sending a four to six foot high wave of swirling, muddy flood water rushing down Sink Springs Creek north of San Marcos. At the same time, another wave of water gushed down Purgatory Creek northwest of San Marcos, causing nearly one-fourth of the city to be under water and causing \$7.7 million in flood damages and a Presidential Disaster Declaration for San Marcos.

Floods of 1972, 1985, 1998, 2001, 2002 and 2007 have caused some flooding in the area, but not to the extreme seen in 1970 that resulted in two deaths and 2,000 acres within the city covered in water. The 1970 flood spurred action and through the cooperative efforts of federal and state governments, and city and county officials, the Upper San Marcos Watershed, Reclamation and Flood Control District formed (also known as the Upper San Marcos Watershed District).

NRCS assisted the watershed district in constructing the five flood prevention dams between 1981 and 1991. They also helped improve channels on Purgatory and Willow Springs creeks to reduce the amount of flood waters entering the city during and after a rainfall event.

The original agreement was between the Upper San Marcos Watershed District, Hays County Commissioners Court, city of San Marcos, Comal-Hays-Guadalupe SWCDs and the NRCS. In 1985, Hays County SWCD split from the Caldwell-Travis SWCD and became its own district and took over its portion of responsibility for the floodwater retarding structures in agreement with the other sponsors.

"I encouraged and coordinated this tour in order to get the current elected officials and sponsors who had not had a chance to view these sites to clearly grasp the importance of the infrastructures that provide benefits by reducing damages to homes, business, roads, bridges and agricultural lands, as well as protecting many people's lives," said Jan Thompson, chairwoman of the Hays County SWCD. "It is crucial we are all on the same page in understanding each of our roles in this important agreement. And I feel it is time that we update and sign a new agreement to ensure continuous inspection and maintenance of these flood control structures to ensure future safety of the city and residents of San Marcos and outlying areas."



Dam site #5 on Purgatory Creek, which lies above Wonder World Drive and Hernandez Intermediate School, was the first stop for the group as they viewed the large cement structure called the principal spillway that releases water through the dam at a controlled rate. Then they viewed the emergency spillway that keeps floodwaters from topping the dam and possibly washing it out. They also learned how the clay core of the rock-lined dam helps to stabilize and strengthen the structure to provide it longevity and ability to withstand 100-year flood events. In 1998, this structure was subjected to a flood of nearly a 500-year frequency; the structure held and prevented another 1970s disaster of San Marcos.

“Flows can continue for up to 10 days after the rainfall ceases. This slow release of the captured storm runoff prevents or greatly reduces downstream flooding,” said Bill Taylor, administrator of the Upper San Marcos Watershed District. “The dams also allow the water to recharge the Edwards Aquifer. In 1977, when we first discussed the reclamation provided by the five structures, it was estimated that the amount of water (in a normal year of rainfall) being put back into the aquifer was approximately 1.5 billion gallons, and that matched very closely the amount of water that was used in a year by the City of San Marcos.”

Taylor explained the City of San Marcos owns a portion of this dam site and most of this property will continue to be a greenbelt area to recharge the Edwards Aquifer. The city is planning on building a three-mile congestion relief route to extend Wonder World Drive to Ranch Road 12, which includes a one-half mile flyover extension above the dam area. Some concerns were identified by the Upper San Marcos Water District (USMWD) early in the planning of this extension about the support columns for this elevated roadway intruding into the area of the emergency spillway of the dam.

“These issues have now been addressed to the satisfaction of the USMWD, NRCS and the Texas Commission on Environmental Quality by the engineering firm retained by the city of San Marcos,” Taylor said. “This structure, in concert with four other similar dams on the two dry creeks systems which run into the San Marcos River, will continue to provide much needed relief from the history of flooding experienced by this community.”

Todd Derkacz with the San Marcos Greenbelt Alliance also toured the watersheds and said, “People hear about the watersheds, but can’t grasp what is here. The soil and vegetation are the first line of defense against flooding. We need to protect these structures and areas to keep the footprint of the pervious cover that slows the rate of water flow.”

The tour continued to site #3 on Sink Creek, off Hilliard Road on the Hughson-Blackwell Ranch, above Aquarena Springs. During the 1998 flood, Terry Blackwell crawled through the underbrush to reach the dam site to take photos and report on the rising water to Taylor.

“After Bill told me how high the water could get, I had to see for myself and I also wanted to know the water flow, since we were planning to build our home on the place,” said Blackwell. “Luckily, there was a break in the rain from about 4 until 6 p.m., so I had the opportunity to take some photos and not get too wet. It was something else to see that much water! The dam was doing its job holding back water and slowing it down.”

Dr. Richard Earl, Professor in the Geography Department at Texas State and flooding specialist, estimated the water flowing through the emergency spillway on site #3 dam during the 1998 flood was 15,000 cubic feet/second, was nearly 100 times the average flow of the San Marcos River of 170 cubic feet/second.

The third stop was at the Williamson-Freeman Dam, northwest of San Marcos on the Freeman Ranch. Once complete, the dam would form a lake that would cover 600 surface acres during flood stage, and in two weeks, there would be a dry hole again since the water could disappear quickly into the porous limestone beneath the watershed recharging the Edwards Aquifer.

The San Marcos Baptist Academy on Ranch Road 12 overlooks the fourth and highest dam site, Storey-Robinson Dam on Purgatory Creek.

Kendria Ray told the group that the Texas State Soil and Water Conservation Board is in the process having the local NRCS evaluate each dam to see what repairs are needed and where money is needed more for repairs. She said the Hays County dams are in good shape compared to others across the state, some of which are more than 50 years old, and encouraged the group to keep up the maintenance to ensure the longevity of the dams.

The last site visited was #2 on Sink Creek off of Lime Kiln Road. After the tour, Rick Mireles, field engineer with the NRCS, told the group that dams were originally built for agriculture protection of crops and livestock, but as Texas grew and urbanized the later dams were built to protect urban areas like San Marcos. “It is important to keep them up in maintenance and operation since they are protecting so many lives and homes in San Marcos and Hays County,” he said.

The floodwater retarding structures were designed to provide protection from the 50-year to 100-year frequency events. Even though the storms of October 1998 exceeded the storm design, property damage was greatly reduced due to the implementation of the many watershed projects in the area. Estimated overall benefits exceeded \$55 million. In the Upper San Marcos River Watershed, the five dams accounted for \$20 million in benefits during the 1998 Central Texas flood by reducing flooding depths by 6-8 feet in the City of San Marcos, preventing loss of human life, and saving the city from a catastrophic event.

During the Flood of 2002 (late June and early July), the five dams provided \$10 million in flood damage reduction benefits in the Upper San Marcos Watershed.

Hays County Judge Liz Sumter summed up the tour by saying, “Two things struck me as very important for citizens of Hays County to know about our dam structures besides it is San Marcos’ lifesaver. One, the amount of water that is recharged into the Edwards Aquifer by these dam structures is phenomenal. Secondly, that there were to be seven dams and only five were built. It is important that we probably take a hard look at possibly building the sixth dam and that the more impervious cover we can prevent upstream from these dams the better off San Marcos and all of us are.

“As San Marcos’ population grows, residents should be questioning what they can do to protect their watersheds,” said Judge Sumter. “I hope that as everyone continues to learn more about their surrounding watersheds, open space and environment that they will continue supporting the preservation and maintenance of these areas because they are vital to human and animal protection and quality of life.”

In attendance at the tour was Hays County Judge Liz Sumter and her assistant, Jeff Laws; Commissioners Court members Karen Ford and Will Conley; Upper San Marcos River Watershed Board members Bill Taylor, Buel Peevy, and Dr. Richard Earl; Hays County SWCD Board members Jan Thompson and Susie Carter; San Marcos Greenbelt Alliance board members, Todd Derkacz and Sherwood Bishop, who is also a member of the San Marcos Planning and Zoning Commission; NRCS staff of Cris Perez, Bill Finch and Rick Mireles; Texas State Soil and Water Conservation Board representative, Kendria Ray; Hays County Grant writer, Jeff Hauff; Hays County Road and Bridge Operations Superintendent, Tim Van de Vorde; and other guests from the San Marcos Greenbelt Alliance, owners of the Hughson-Blackwell Ranch, Jane Hughson and Terry Blackwell.

For more information on the five flood control dams, contact Bill Taylor at (512) 392-7695 or Cris Perez, district conservationist with the USDA-NRCS office at (512) 392-4050, ext. 3.

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